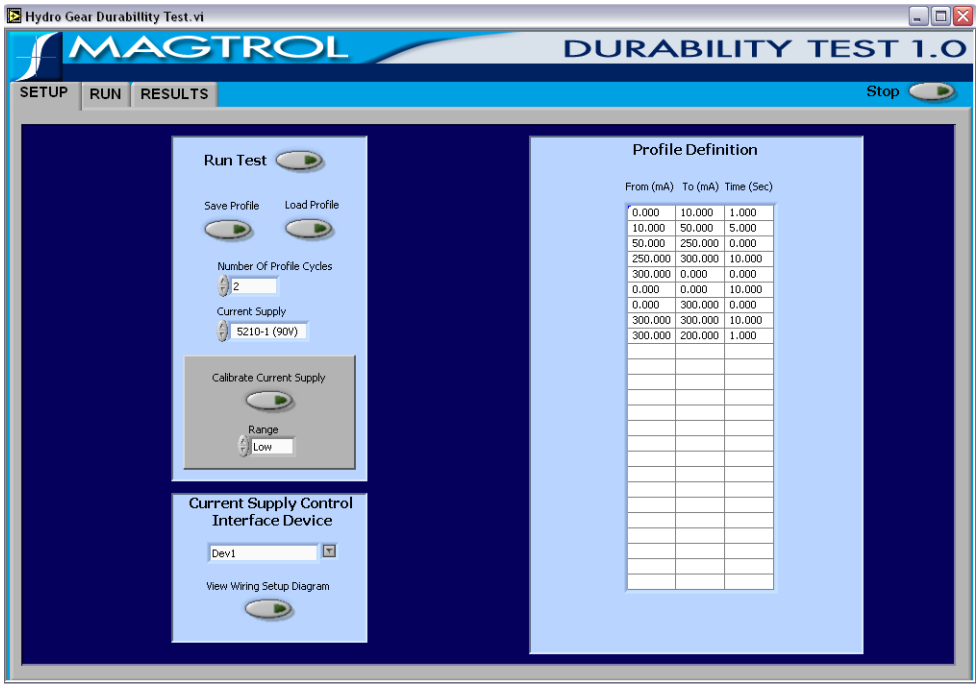
MAGTROL

Durability Test 1.0 Software



User's Manual

Purchase Record

Please record all model numbers and serial numbers of your Magtrol equipment, along with the general purchase information. The model number and serial number can be found on either a silver identification plate or white label affixed to each unit. Refer to these numbers whenever you communicate with a Magtrol representative about this equipment.

Model Number: _____

Serial Number: _____

Purchase Date: _____

Purchased From: _____

While every precaution has been exercised in the compilation of this document to ensure the accuracy of its contents, Magtrol, Inc. assumes no responsibility for errors or omissions. Additionally, no liability is assumed for any damages that may result from the use of the information contained within this publication.

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Pentium® is a registered trademark of Intel Corporation.

First Edition – December 2007

MAGTROL

Safety Precautions



1. Make sure that all Magtrol brakes and electronic products are earth-grounded, to ensure personal safety and proper operation.
2. Check line voltage before operating electronic equipment.
3. Make sure that brakes and motors under test are equipped with appropriate safety guards.

Revisions To This Manual

The contents of this manual are subject to change without prior notice. Should revisions be necessary, updates to all Magtrol User's Manuals can be found at Magtrol's web site at www.magtrol.com/support/manuals.htm.

Please compare the date of this manual with the revision date on the web site, then refer to the manual's Table of Revisions for any changes/updates that have been made since this edition.

REVISION DATE

First Edition – December 2007. Corresponds to revision 7.12.4 and later versions of Durability Test Software.

TABLE OF REVISIONS

Date	Edition	Change	Section(s)
12/21/07	1st Edition	New "dual" program option allows user to control two test setups from one PC.	1.3, 2.3.1, 4.1, 4.6

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Preface

PURPOSE OF THIS MANUAL

This manual contains information required for installation and general use of Magtrol's Durability Test 1.0 Software. To achieve maximum capability and ensure proper use, please read this manual in its entirety before operating. Keep the manual in a safe place for quick reference whenever a question should arise.

WHO SHOULD USE THIS MANUAL

This manual is intended for those operators in need of a software program to complement their Magtrol test equipment setup. The setup may include the following Magtrol products:

- HB or AHB Series Hysteresis Brakes
- Model 5210 Current-regulated Power Supply

MANUAL ORGANIZATION

This section gives an overview of the structure of the manual and the information contained within it. Some information has been deliberately repeated in different sections of the document to minimize cross-referencing and to facilitate understanding through reiteration.

The structure of the manual is as follows:

Chapter 1: INTRODUCTION – Provides a description of Durability Test 1.0, system requirements and software features.

Chapter 2: INSTALLATION/CONFIGURATION – Provides general installation instructions for Durability Test 1.0 software and the National Instruments USB-6008 Multifunction DAQ.

Chapter 3: SOFTWARE INTERFACE – Provides instruction for Durability Test 1.0 startup. Includes a brief overview of the software capabilities.

Chapter 4: TEST SETUP – Contains the information needed to load, configure and save a test profile.

Chapter 5: TEST RUN – Contains information about the Run program area/window.

Chapter 6: TEST RESULTS – Contains information about the Results program area/window.

Appendix A: SOFTWARE REVISION HISTORY – Displays timeline of all Durability Test 1.0 releases, including brief descriptions of changes involved with each revision.

CONVENTIONS USED IN THIS MANUAL

The following symbols and type styles may be used in this manual to highlight certain parts of the text:



Note: This is intended to draw the operator's attention to complementary information or advice relating to the subject being treated. It introduces information enabling the correct and optimal functioning of the product to be obtained.



CAUTION: THIS IS USED TO DRAW THE OPERATOR'S ATTENTION TO INFORMATION, DIRECTIVES, PROCEDURES, ETC. WHICH, IF IGNORED, MAY RESULT IN DAMAGE BEING CAUSED TO THE MATERIAL BEING USED. THE ASSOCIATED TEXT DESCRIBES THE NECESSARY PRECAUTIONS TO TAKE AND THE CONSEQUENCES THAT MAY ARISE IF THE PRECAUTIONS ARE IGNORED.



WARNING! THIS INTRODUCES DIRECTIVES, PROCEDURES, PRECAUTIONARY MEASURES, ETC. WHICH MUST BE EXECUTED OR FOLLOWED WITH THE UTMOST CARE AND ATTENTION, OTHERWISE THE PERSONAL SAFETY OF THE OPERATOR OR THIRD PARTY MAY BE PUT AT RISK. THE READER MUST ABSOLUTELY TAKE NOTE OF THE ACCOMPANYING TEXT, AND ACT UPON IT, BEFORE PROCEEDING FURTHER.

1. Introduction

1.1 ABOUT DURABILITY TEST 1.0

Magtrol's Durability Test software is designed for use with Windows®2000/XP operating systems. In conjunction with a calibrated Magtrol Hysteresis Brake, the software applies a user-programmable profile of torque load values to a motor under test. The torque load profile can be saved for future use, and/or run through repeated cycles.

Durability Test is equipped to work in conjunction with the following Magtrol motor testing instruments:

- Hysteresis Brakes (HB, AHB)
- Model 5210 Current-Regulated Power Supply (5210-1, 5210-2, 5210-3)

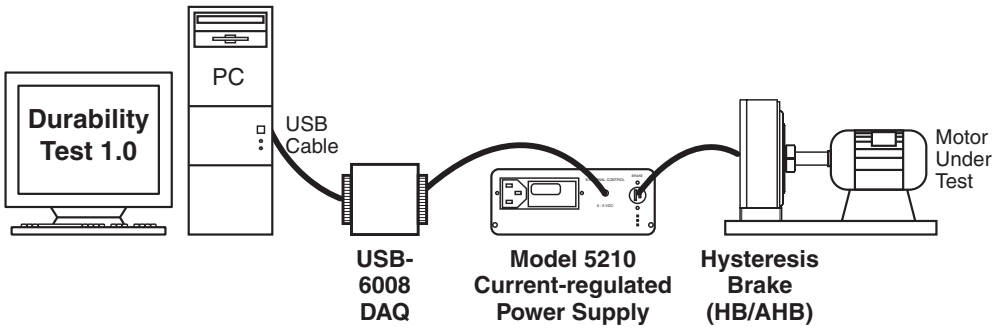


Figure 1–1 Durability Test 1.0 System Configuration

1.2 SYSTEM REQUIREMENTS

- Personal computer with Intel® Pentium® IV processor (or equivalent)
- Microsoft® Windows® 2000/XP
- 128 MB of RAM (256 MB recommended)
- 1 GB of available hard drive space
- VGA color monitor with minimum screen resolution of 1024 × 768
- National Instruments™ USB-6008 Multifunction DAQ

1.3 SOFTWARE FEATURES

- Graphical user interface with tabbed pages for quick navigation
- Customizable, 25-point profiles can be saved for future use
- Ability to cycle user-defined profiles repeatedly
- Calibration for individual current supply range settings
- Two test setups can be controled from one PC by running the "dual" version of the software.

2. Installation/Configuration

2.1 INSTALLATION/CONFIGURATION PROCEDURE

The general installation/configuration order is as follows.

1. Install Durability Test 1.0 product software and drivers.
2. Wire National Instruments™ USB-6008 Multifunction DAQ as indicated in *Figure 2–1 USB-6008 Wiring Diagram*.
3. Install USB-6008 Multifunction DAQ according to National Instruments' user documentation.
4. Connect USB-6008 Multifunction DAQ between PC's USB port and 5210 Current-regulated Power Supply's external control input.

The remainder of this chapter will provide specific installation instructions for each component of the system.

2.2 SOFTWARE AND DRIVER INSTALLATION

1. Exit all other programs before installing Durability Test 1.0.
2. Insert the Durability Test 1.0 CD in your CD-ROM drive. The Durability Test 1.0 Installation Wizard will begin automatically.



Note: If AutoRun is disabled on your computer, the installation process must be started manually. On the taskbar, click the **Start** button, and then click **Run**. Click **Browse** to locate the CD-Rom drive where the Durability Test 1.0 installation CD is inserted. From the Durability Test CD root directory, select **setup.exe** then click **Open**.

3. Click **Next**.
4. Select the Destination Folder then click **Next**. The default is C:\Program Files\Hydro Gear Durability Test\. To install into a different folder, click the Browse button and select another folder.
5. Click **Finish**. The required Durability Test 1.0 drivers will be automatically installed with the software. National Instruments™ NI-DAQ™mx Data Acquisition Driver Software will also be automatically installed.
6. After the installation of the Durability Test 1.0 and NI-DAQmx software is complete, your computer will automatically re-boot. Please note that this may take several minutes.

2.3 NATIONAL INSTRUMENTS™ USB-6008 MULTIFUNCTION DAQ INSTALLATION

The Durability Test software interfaces with the external control input of a Magtrol 5210 Current-regulated Power Supply through a USB-driven DAQ module (National Instruments™ USB-6008 Multifunction DAQ). The USB-6008 can be purchased through Magtrol or directly from National Instruments.

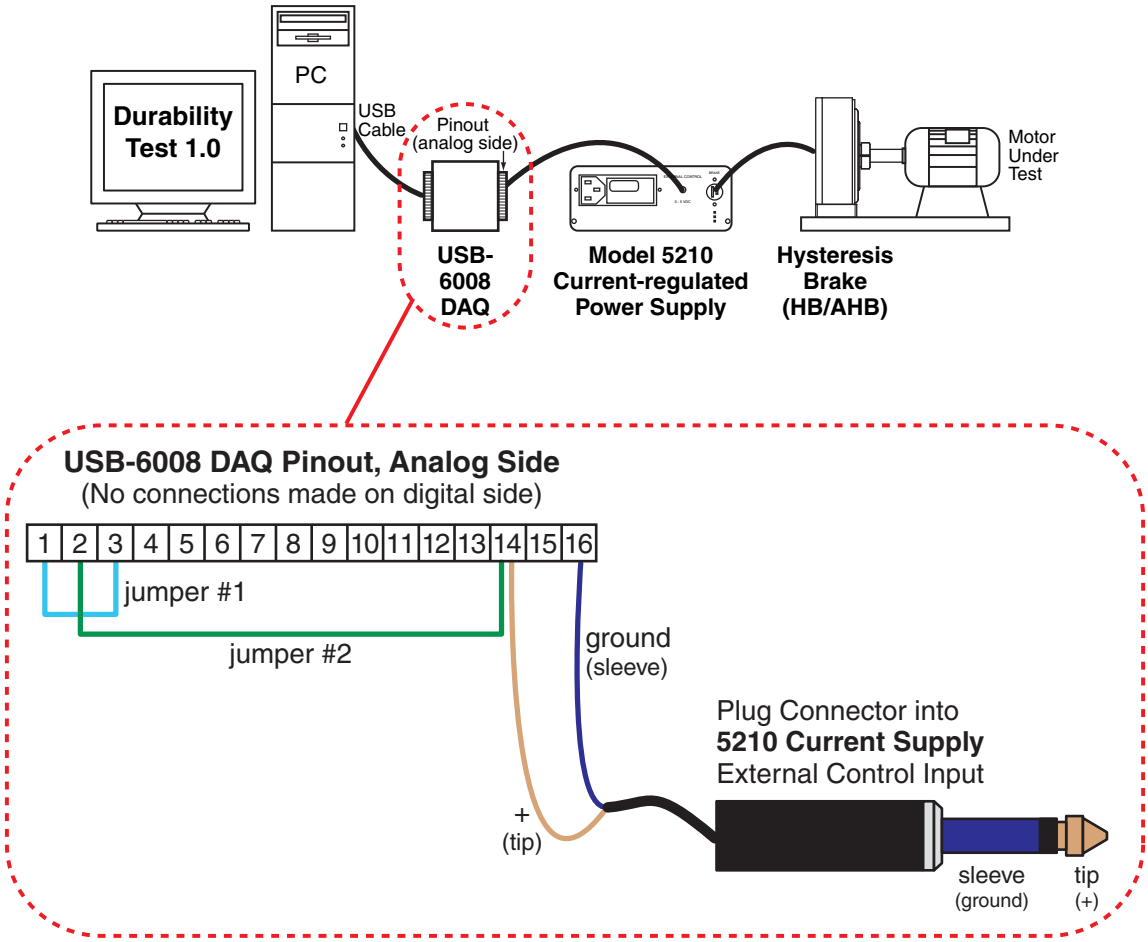


Figure 2–1 USB-6008 Wiring Diagram

1. Use a jumper wire to connect pin 1 of the USB-6008 to pin 3.
2. Use a second jumper wire to connect pin 2 of the USB-6008 to pin 14.
3. Connect the + lead (tip) of the 5210 Current Supply's external control cable to pin 14 of the USB-6008.
4. Connect the ground lead (sleeve) of the 5210 external control cable to pin 16 of the USB-6008.
5. Install the USB-6008 DAQ according to National Instruments' user documentation, plugging it into an available USB port on the PC.

2.3.1 NI-DAQmx Device Setup

If other National Instruments DAQmx hardware devices (besides the USB-6008) are installed inside, or connected to, the PC you must determine the name given to the USB-6008 Device in the NI Measurement & Automation Explorer interface.

1. Open NI Measurement & Automation Explorer

   Either go to: **Start Menu >> All Programs >> National Instruments >> Measurement & Automation**

   or click **Configure and Test This Device** when the New Data Acquisition Device dialog box opens, detecting the USB-6008.

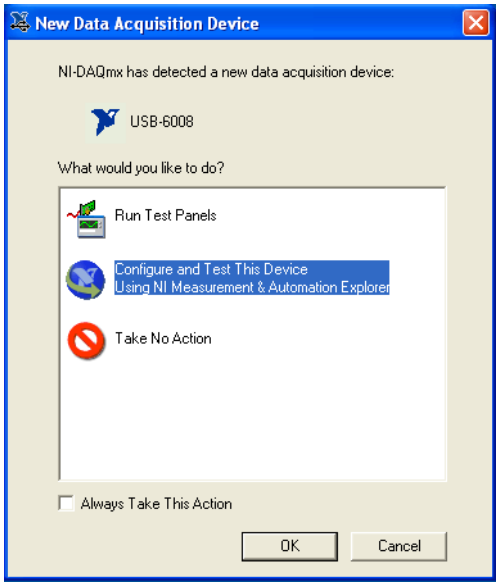


Figure 2–2 New Data Acquisition Device Dialog Box

2. Locate NI USB-6008 under **My System >> Devices and Interfaces >> NI-DAQmx Devices**.

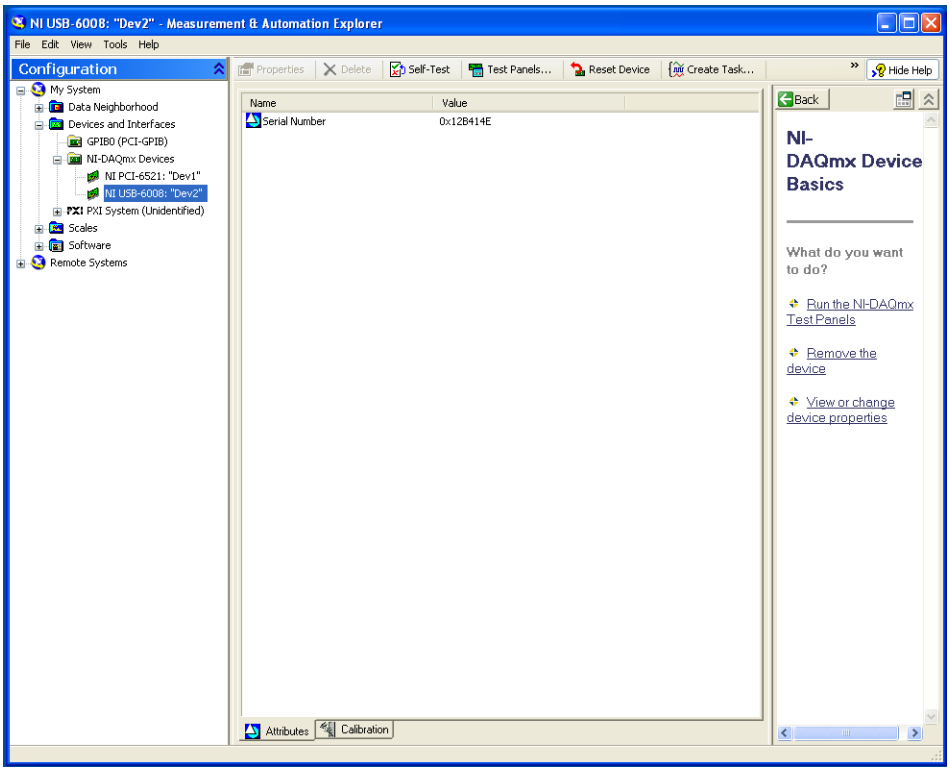


Figure 2–3 Measurement & Automation Explorer Interface

3. Note the name of the NI USB-6008: In the example above it is Device 2 (“Dev2”).
4. If more than one NI USB-6008 device is attached, for dual testing, note the second device.
5. Exit Measurement & Automation Explorer.

3. Software Interface

3.1 STARTUP

From the taskbar, click **Start,** point to **Programs** >> **Durability Test**, then click **Durability Test.**

3.2 DURABILITY TEST WINDOWS

The following outline is a representation of how Durability Test 1.0 is organized and shows, at a quick glance, where all the main features are located within the program. The three navigation tabs displayed at the top of the Durability Test 1.0 screen are purposely in the same order (sequentially from left to right) as a standard test procedure.



Note: For detailed explanations of every button and control of each window (program area), please refer that window's corresponding chapter in this manual.

3.2.1 SETUP

- Select hardware.
- Select number of cycles and current/time load points.
- Load or save an existing test profile.
- Run test.

3.2.2 RUN

- Graphically displays live test data.

3.2.3 RESULTS

- Displays test status.

4. Test Setup

4.1 TEST SETUP WINDOW

In the **Start** menu, under All Programs >> **Durability Test**, select **Durability Test**. If two test setups are to be controled from one PC, select **Durability Test - Dual**.

The Setup window is the first window that appears when Durability Test 1.0 is launched. Two identical setup windows will appear if Dual mode is selected (as shown in *Figure 4–1*).

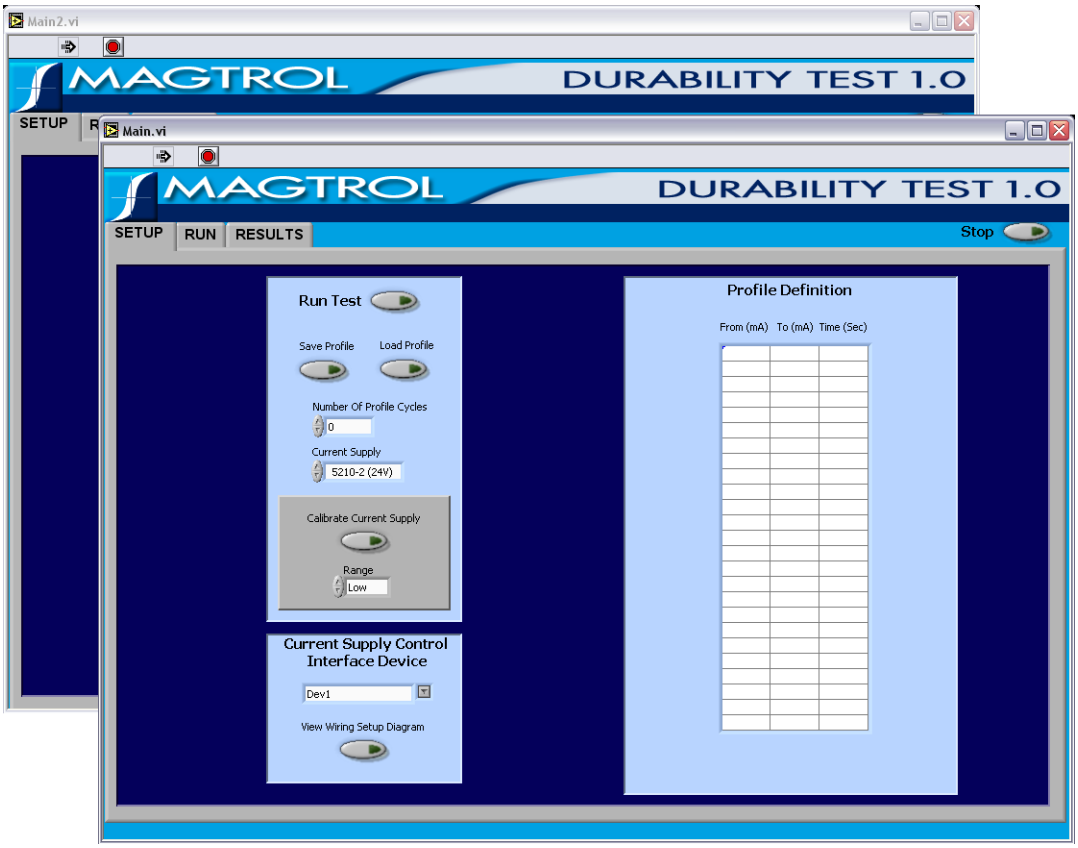


Figure 4–1 Setup Window(s)

4.2 LOAD PROFILE

To load a previously saved profile, click the **Load Profile** button and select the appropriate file in the Load Profile dialog box. If no profile is loaded, a new one will begin.

4.3 NUMBER OF PROFILE CYCLES

Select desired number of cycles for this test profile.

4.4 CURRENT SUPPLY

Select the Magtrol current-regulated power supply to be used. The default is 5210-2 (24V).

4.5 CALIBRATE CURRENT SUPPLY

1. Select the desired **Range** then click the **Calibrate Current Supply** button. The Current Range window will appear:

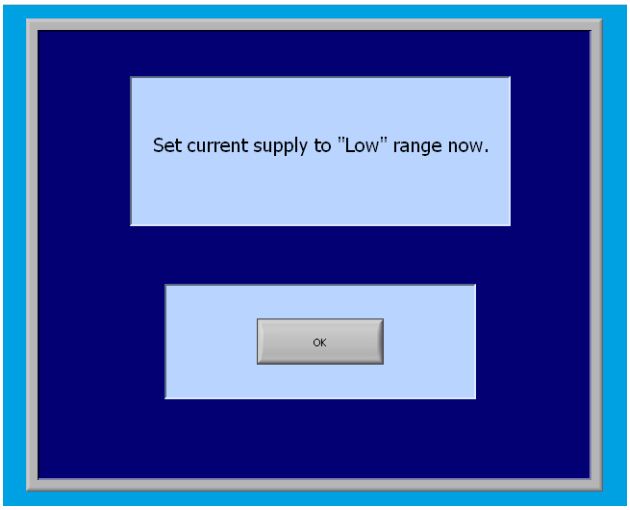


Figure 4–2 Current Range Window

2. Set the 5210 Current-regulated Power Supply to the range indicated on the screen and click **OK**. The Calibration window will appear.

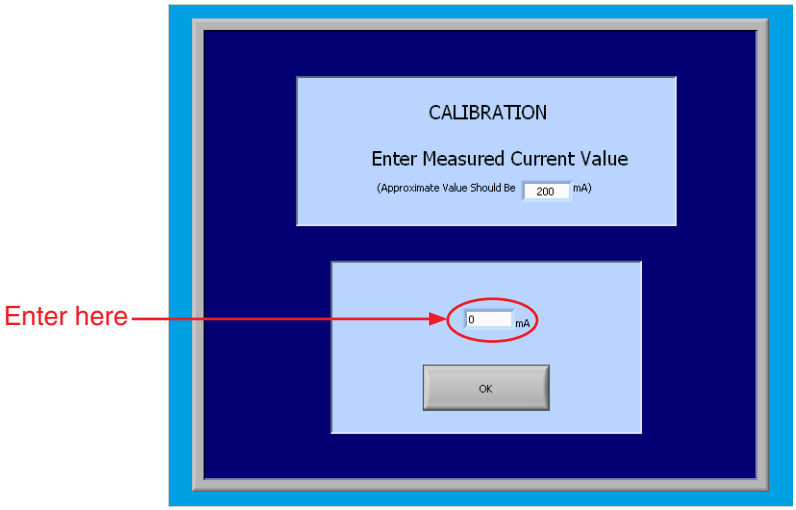


Figure 4–3 Calibration Window

3. Enter the measured current value (in mA) in the lower text box. The current value can be read from the 5210 display or be measured by an external device.

   The upper box shows the approximate anticipated current level. This value is given to alert the user to potential setup errors.

4. Click **OK**. After calibration is complete, the Calibration window closes and the calibration data is saved. Durability Test 1.0 is now ready to run a test using the selected current scale.

Note: The software will not run a test until calibration has been performed. A reminder message will be displayed if a test is attempted without the current supply being calibrated.

4.6 CURRENT SUPPLY CONTROL INTERFACE DEVICE

Select the analog output device for the Model 5210 Current-regulated Power Supply selected under **Current Supply**. The selected device must be a USB-6008 DAQ. If multiple tests are being controled from one PC, a different USB-6008 must be selected for each test setup.

Note: To determine which device is named "Dev 1", "Dev 2", etc., first locate the USB-6008 Device in the NI Measurement & Automation Explorer interface. See S*ection 2.3.1 – NI-DAQmx Device Setup.*

4.6.1 VIEW WIRING SETUP DIAGRAM

Click to display a diagram illustrating the pinout and wiring information of the selected interface.

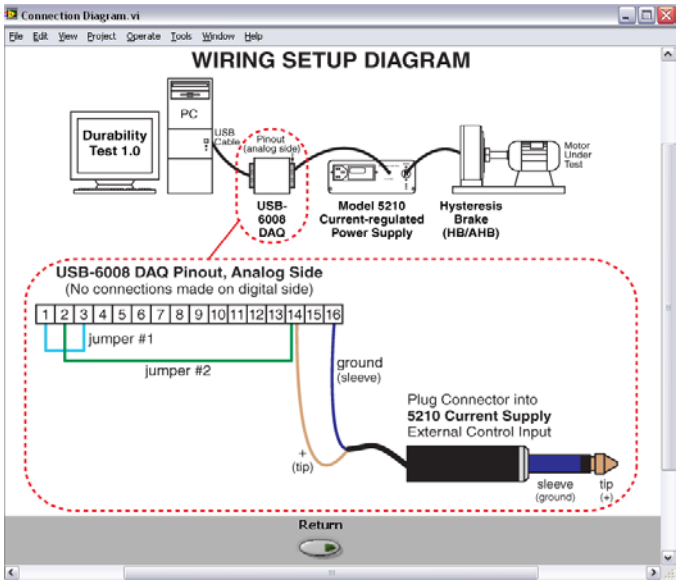


Figure 4–4 Wiring Setup Diagram

4.7 PROFILE DEFINITION

1. Enter **From** and **To** current values (in mA) for each load point.

Note: **From** and **To** values may be the same for a given point.

2. Enter **Time** values (in seconds) for each load point.

Note: For an immediate step to the next load value, enter "0" for the **Time**.

4.8 SAVE PROFILE

The current profile including current supply, number of cycles, and profile definition can be saved by clicking the **Save Profile** button. The Save Profile dialog box will appear.

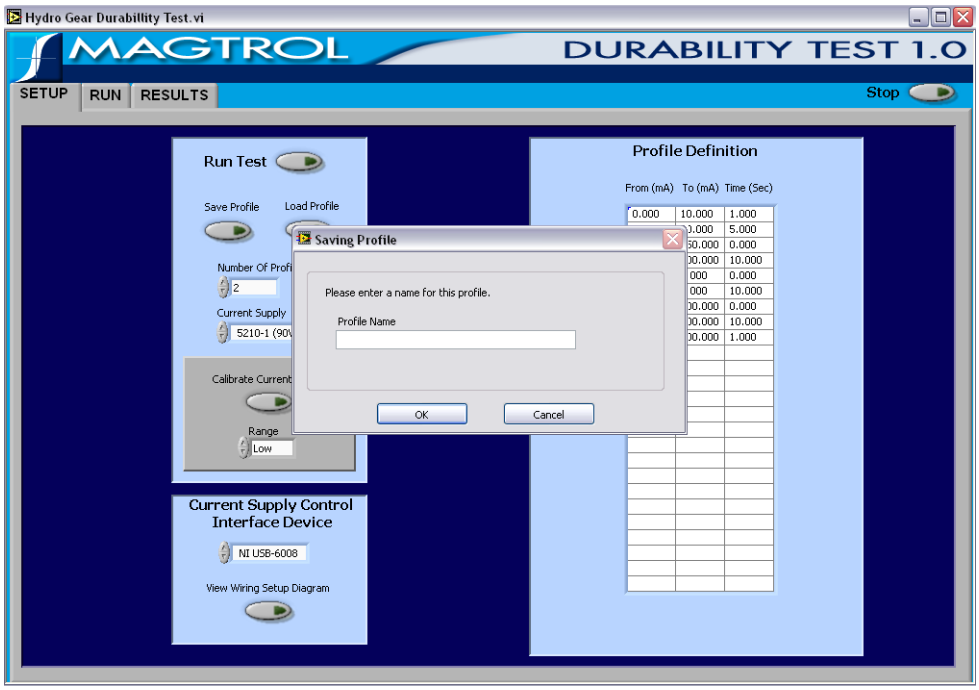


Figure 4–5 Save Profile Dialog Box

Enter a filename and click **OK**. The profile is saved as an .xls file in the directory: C:\Magtrol\ Durability Test\Profiles\ (where "C" is the default drive for the software installation).

4.9 RUN TEST

Click the **Run Test** button when ready to begin the test. The Run window will open automatically.

5. Test Run

After the Run Test button on the Setup window is pressed, the test begins and the Run window opens.

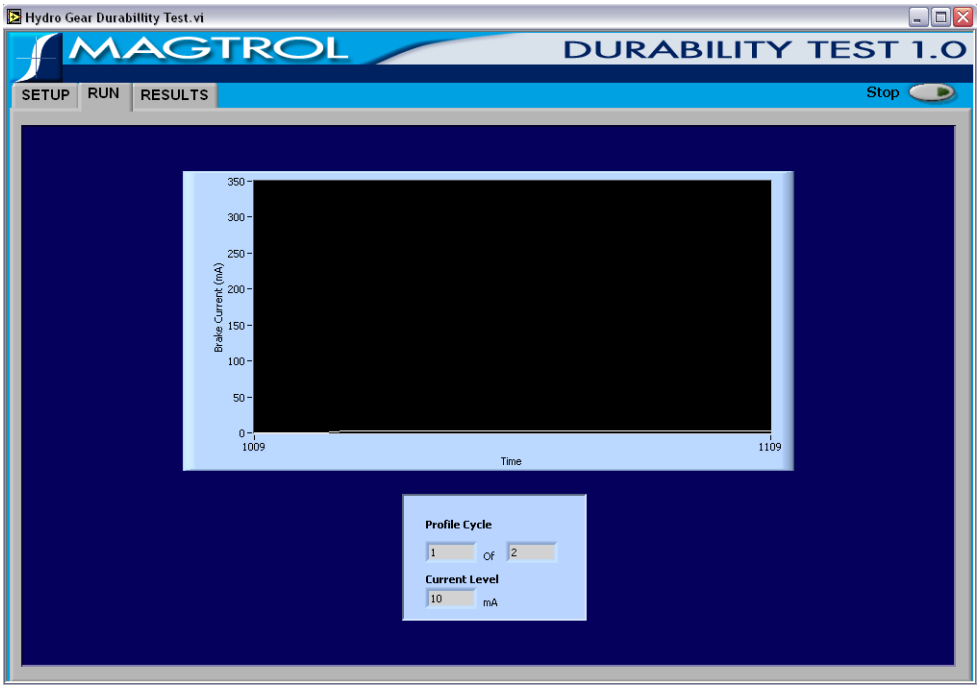


Figure 5–1 Run Window

5.1 CURRENT VS. TIME GRAPH

Displays a graphical representation of the test cycle in progress, plotting the brake current (in mA) against the time (in seconds).

5.2 PROFILE CYCLE

Displays cycle number in progress in addition to total number of cycles to be run.

5.3 CURRENT LEVEL

Indicates which load point is currently being tested by displaying the “To” current value, as designated in the Profile Definition in the Setup window.

6. Test Results

After the test is complete, the Results window will open automatically.

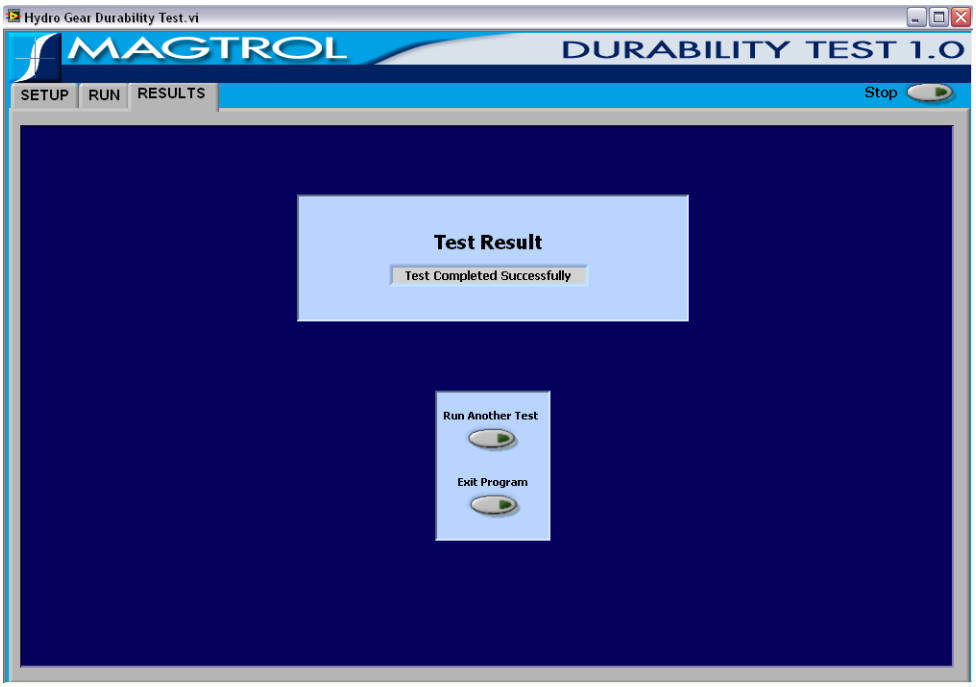


Figure 6–1 Results Window

6.1 TEST RESULT

Indicates whether or not the test was completed successfully.

6.2 RUN ANOTHER TEST

Returns to Setup window with option to re-run the same test again or load/set up a new test.

6.3 EXIT PROGRAM

To save the existing profile, if not already done so, return to the Setup window and click the **Save Profile** button.

Note:	No test data is saved.

Service Information

RETURNING MAGTROL EQUIPMENT FOR REPAIR AND/OR CALIBRATION

Before returning equipment to Magtrol for repair and/or calibration, please visit Magtrol's Web site at http://www.magtrol.com/support/rma.htm to begin the Return Material Authorization (RMA) process. Depending on where the equipment is located and which unit(s) will be returned, you will be directed to either ship your equipment back to Magtrol, Inc. in the United States or Magtrol SA in Switzerland.

Returning Equipment to Magtrol, Inc. (United States)

When returning equipment to Magtrol, Inc.'s factory in the United States for repair and/or calibration, a completed Return Material Authorization (RMA) form is required.

1. Visit Magtrol's Web site at http://www.magtrol.com/support/rma.htm to begin the RMA process.
2. Complete the RMA form online and submit.
3. An RMA number will be issued to you via e-mail. Include this number on all return documentation.
4. Ship your equipment to:
   MAGTROL, INC.
   70 Gardenville Parkway
   Buffalo, NY 14224
   Attn: Repair Department
5. After Magtrol's Repair Department receives and analyzes your equipment, a quotation listing all the necessary parts and labor costs, if any, will be faxed or e-mailed to you.
6. After receiving your repair estimate, provide Magtrol with a P.O. number as soon as possible. A purchase order confirming the cost quoted is required before your equipment can be returned.

Returning Equipment to Magtrol SA (Switzerland)

If you are directed to ship your equipment to Switzerland, no RMA form/number is required. Just send your equipment directly to Magtrol SA in Switzerland and follow these shipment instructions:

1. Ship your equipment to:
   MAGTROL SA
   After Sales Service
   Route de Montena 77
   1728 Rossens / Fribourg
   Switzerland
   VAT No: 485 572
2. Please use our forwarder : TNT • 1-800-558-5555 • Account No 154033
   Only ship ECONOMIC way (3 days max. within Europe)
3. Include the following documents with your equipment:
   - Delivery note with Magtrol SA's address (as listed above)
   - Three pro forma invoices with:
     - Your VAT number
     - Description of returned goods
     - Noticed failures
     - Value - for customs purposes only
     - Origin of the goods (in general, Switzerland)
4. A cost estimate for repair will be sent to you as soon as the goods have been analyzed. If the repair charges do not exceed 25% the price of a new unit, the repair or calibration will be completed without requiring prior customer authorization.



Testing, Measurement and Control of Torque-Speed-Power • Load-Force-Weight • Tension • Displacement

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